



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/482,277	01/13/2000	Kari Laurila	460-009132-US(PAR)	6769

7590 11/06/2003

Clarence A Green
Perman & Green LLP
425 Post Road
Fairfield, CT 06430

EXAMINER

STORM, DONALD L

ART UNIT	PAPER NUMBER
----------	--------------

2654

DATE MAILED: 11/06/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/482,277

Applicant(s)

LAURILA ET AL.

Examiner

Donald L. Storm

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,8,10 and 11 is/are rejected.
- 7) ☒ Claim(s) 3,4,6,7 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Allowable Subject Matter

1. The indication of allowable subject matter in claim 2 is withdrawn in view of the newly discovered references authored by the Applicants. Rejections based on the newly discovered references follow.

Specification

2. The specification is objected to under 37 CFR 1.84(p)(5) using the same rationale as in the prior Office action (paper 6)

Claim Informalities

3. Claims 3, 4, 6, 7, and 9 are objected to as being (directly or indirectly) dependent upon a rejected base claim. See MPEP § 608.01(n)V. The claim(s) would be allowable over the prior art of record if rewritten to include all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 5, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iso-Sipilä, J., K. Laurila, R. Hariharan, and O. Viikki, "Hands-Free Voice Activation in Noisy Car Environment," Proc. Eurospeech 97, Rhodes, Greece, 1997, pp. 2375-2378, in view of Viikki, Olli, D Bye, and Kari Laurila, " A Recursive Feature Vector Normalization Approach for Robust Speech Recognition in Noise," Proc. 1998 IEEE Int. Conf. Acoust., Speech, Sig. Proc., ICASSP '98, 12-15 May 1998, vol. 2, pp. 733-736.

6. Regarding claim 8, Iso-Sipilä and Viikki describe and make obvious the claimed limitations as a whole, because Iso-Sipilä [at section 1] describes speech recognition and utterance detection approaches that describe the claimed limitations recognizable to one versed in the art as the following elements:

a speech command uttered by a user [at section 5, as a command word preceded and followed by silence];

means for dividing the frequency spectrum of the signal into subbands [at section 5, as an algorithm creates subbands (frequency bands)];

samples of the signals in the subbands [at section 5, as decimated MFCC];

means for determining energy levels of the subbands based on the samples [at section 5, as an algorithm creates energies of subbands by MFCC band energies];

means for determining a power threshold [at section 5, as an algorithm determining P_{thr}];

means for comparing the energy levels with the threshold [at section 5, as an algorithm finding when each subband energy falls below the threshold];

the comparison results produce a pause detecting result [at section 5, in other words, a pause detection requirement is the subband energy falls below the threshold];

means for detecting on each subband a pause in the speech based on the comparison results [at section 5, as an algorithm finds the time instant when each subband energy falls below the threshold, in other words a pause is detected];

an activity threshold [at section 5, as enough individual subbands];

means for comparing the number of subbands on which a pause is detected with that threshold wherein if the number of subbands on which a pause is detected is greater than that threshold, there is a pause in speech [at section 5, an algorithm determining if enough individual subbands satisfy the end-of-utterance detection criterion separately, then the end-of-utterance is detected].

Iso-Sipilä does not explicitly describe that the voice is converted into an electrical signal and the electrical signal is processed by the algorithm for pause detection, and storing subband signals.

To create the energy subbands using MFCC to produce band energies, Iso-Sipilä [at section 6] indicates that the procedure found in a reference article [reference 7] was used.

Reference 7 is Viikki, and Viikki describes:

means for converting speech uttered by a user into an electrical signal [at section 1, as a microphone in speech recognition experiments];

means for storing samples of the subband signals at intervals [at section 4.1, as buffer to buffer feature vectors (0.2 secs.)].

To the extent that a microphone to convert speech to electrical signals for processing is not necessarily included to feed voice commands as electrical signals to Iso-Sipilä's algorithm, it

would have been obvious to one of ordinary skill in the art of automatic speech recognition at the time of invention to include Viikki's concept of inputting speech for recognition through a microphone because machine execution of algorithms eliminates repetitive manual calculations. In view of Iso-Sipilä's choice to include Viikki's MFCC front end to recognition processing, it would have been obvious to one of ordinary skill in the art of speech recognition at the time of invention to include Viikki's concepts of microphone input and of storing the feature vectors because Viikki points out that buffering the feature vectors is necessary to achieve good recognition.

7. Regarding claim 10, Viikki also describes:

means for filtering the signals of the subbands before storage [at section 3, as linear high pass filtering (mean removal)].

8. Claim 1 sets forth a method with limitations comprising the functionality associated with using the apparatus recited in claim 8. Because Iso-Sipilä and Viikki describe and make obvious the similar limitations as indicated there, this claim thus is unpatentable accordingly.

9. Regarding claim 2, Iso-Sipilä also describes:

a detection time limit is determined [at section 5, as an amount of frames when the energy value remains below the threshold is required];

a detection quantity is determined [at section 5, determine enough individual subbands that satisfy the end-of-utterance detection criterion separately to detect the end of utterance];

the calculation of the pause length in a subband is started when the energy of a subband falls below the threshold [at section 5, as find the time period when each subband energy falls below the threshold to detect a pause after something has been uttered];

a subband specific detection is performed when the calculation reaches the detection time limit [at section 5, as detect the end of utterance for the subband when the energy value remains below the threshold for the required number of frames];

how many subbands were below the threshold longer than the detection time limit is examined, wherein a pause decision is made if that number is greater than or equal to the detection quantity [at section 5, as if enough individual subbands satisfy the end-of-utterance detection criterion separately, then the end-of-utterance is detected].

10. Regarding claim 5, Iso-Sipilä also describes:

the threshold is calculated adaptively by taking into account the environmental noise level at each instant [at section 5, as the energy values used to calculate the threshold are updated in each frame also to compensate for environment].

11. Claim 11 sets forth limitations similar to claim 8. Iso-Sipilä and Viikki describe and make obvious the limitations as indicated there. Iso-Sipilä also describes an embodiment of a wireless communications device [at section 1, as mobile radio].

Response to Arguments

12. The prior Office action, mailed April 7, 2003 (paper 6), objects to the title, abstract, specification, and claims, and rejects claims under 35 USC § 102, citing Forse. The Applicant's

arguments and changes in AMENDMENT filed August 8, 2003 (paper 7) have been fully considered with the following results.

13. With respect to objection to the title and to the abstract, the changes entered by amendment are sufficiently descriptive. Accordingly, the objection is removed.

14. With respect to rejection of claims under 35 USC § 102, citing Forse alone, the changes entered by amendment include comparing the number of subbands on which a pause is detected with that threshold wherein if the number of subbands on which a pause is detected is greater than that threshold, there is a pause in speech.

15. The reference Forse does not explicitly describe that limitation. Accordingly, the rejections are removed. The Applicant's assertions with respect to Forse have been considered, but they are moot in view of the new claim element. Please see new grounds of rejection applied to address the new claim element: comparing the number of subbands on which a pause is detected with that threshold wherein if the number of subbands on which a pause is detected is greater than that threshold, there is a pause in speech.

Response to Amendment

16. On page 2 of AMENDMENT filed August 8, 2003 (paper 7), an amendment is directed to page 4, line 26 of the specification to insert --Detailed Description of the Invention--. The directions for the entry appear to be defective, as inaccuracy in the page, paragraph, or line designated. See MPEP § 714.23.

The Examiner has found nearby lines for which the requested amendments were probably intended as shown by the context. The Examiner has caused the heading to be entered in the specification on page 4, line 8.

If the change by the Examiner is unacceptable to the Applicant, detailed instructions should be submitted in the next communication from the Applicant. An amendment may be filed after final rejection as provided by 37 CFR 1.116. An amendment may be filed after allowance as provided by 37 CFR 1.312 (and MPEP § 1303.01).

Conclusion

17. It is incumbent upon each Applicant to disclose on his or her own initiative information material to the examination of this application. Had the Applicant disclosed the Iso-Sipilä and Viikki references that are deemed material to the examination of the instant application, the rejections in view of Iso-Sipilä and Viikki could have been made before now. The proper conclusion on the patentability of the claimed subject matter could have been made before now. The Applicants had over 26 months between this application's filing date and the mail date of the first action on the merits and had four months between that mailing and the response to the first action. Had those publications by the Applicant been disclosed to the Examiner anytime between filing and the first action on the merits, the issues resulting from the prior publication of Iso-Sipilä and Viikki would have been raised in the first Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

19. Any response to this action should be mailed to:

Mail Stop AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

(703) 872-9315, (for formal communications; please mark "EXPEDITED PROCEDURE")

Or:

(703) 872-9315, (for informal or draft communications, and please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA (Sixth Floor, Receptionist).

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (703)305-3941. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703)305-9645. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office at telephone number (703)306-0377.

Donald L. Storm
Donald L. Storm
October 22, 2003


RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER